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Indian Standard

SPECIFICATION FOR ALUMINIUM POLISH, LIQUID FOR AIRCRAFT

UDC 665·92 : 629·7·023·22

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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March 1988

Indian Standard

SPECIFICATION FOR ALUMINIUM POLISH, LIQUID FOR AIRCRAFT

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Indian Standard

SPECIFICATION FOR ALUMINIUM POLISH, LIQUID FOR AIRCRAFT

0. FOREWORD

0.1 This Indian Standard was adopted by the Bureau of Indian Standards on 15 June 1987, after the draft finalized by the Polishes Sectional Committee had been approved by the Chemical Division Council.

0.2 This polish is used for polishing and cleaning surfaces of parts of aircrafts made of aluminium or its alloys and to make it dry without scratches in the metal and without metal deterioration. This polish is also used to make the aircrafts glossy and to protect them from corrosion. The polish contains softer/milder type of abrasives than those used in metal polishes.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for aluminium polish, liquid meant for cleaning and polishing aircrafts.

2. REQUIREMENTS

2.1 The polish shall clean and polish surfaces of parts made of aluminium or aluminium alloys with a minimum effort and shall leave no apparent scratches. Repeated applications of the polish shall improve the lustre and smoothness of the surfaces. The polish when used, shall restore the reflectivity of unpainted aluminium surfaces of aircraft.

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*Rules for rounding off numerical values (*revised*).

2.2 The polish shall contain no ingredients which are hazardous and injurious to health in any way under normal conditions of use.

2.3 The polish shall have no unpleasant odour.

2.4 Composition — The polish shall consist essentially of emulsion of oil with wax and abrasive powder, producing gloss and shine on rubbing with a soft cloth and shall flow free from container without any effort. The material shall be free from acids, inorganic alkalies, grit and other ingredients having deterimental effect on aluminium and its alloys.

2.5 Alkalinity — The *p*H of water extract of polish shall not be higher than 8·0 when tested in accordance with the method prescribed in Appendix E of IS : 5480-1983*.

2.6 Stability Test — After shaking the polish thoroughly, the abrasive material shall remain in suspension and no separation of liquid shall occur within 15 minutes when tested as prescribed in **A-1**.

2.7 The product shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR ALUMINIUM POLISH, LIQUID, FOR AIRCRAFT

Sl No.	Characteristic	Requirement	Method of Test (Ref to Cl No. in Appendix A)
(1)	(2)	(3)	(4)
i)	Non-volatile matter, percent by mass, *Max*	25·0	A-2
ii)	Abrasive content, percent by mass, *Max*	10·0	A-3
iii)	Residue on 75-micron IS Sieve, percent by mass, *Max*	2·0	A-4
iv)	Emulsifying agent, percent by mass, *Min*	5·0	A-5

2.8 Keeping Quality — The polish shall not cake hard inside the container and shall comply with the requirements of this specification for two years from the date of manufacture when stored in original sealed container under cover at 27 ± 2°C.

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*Specification for automobile polish, paste (*first revision*).

3. PACKING AND MARKING

3.1 Packing — The polish shall be supplied in sound and clean containers. The size of the container shall be as agreed to between the manufacturer and the purchaser.

3.2 Marking — The containers shall be marked with the following particulars:

a) Manufacturer's name or his recognized trade-mark, if any;

b) The net volume of the material when packed and the words 'Aluminium Polish, Liquid for Aircraft';

c) Batch/Code No.; and

d) Month and year of manufacture.

NOTE — Any other marking required under Weights and Measures (Packaged Commodities) Regulations 1977 may also be given.

3.2.1 The containers may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

4. TEST METHODS

4.1 Tests shall be carried out as prescribed in Appendix A.

4.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be used for test.

NOTE — ' Pure chemicals ' shall mean chemicals that do not contain impurities which affect the results of analysis.

5. SAMPLING

5.1 The method of preparing samples for the material and the criteria for conformity shall be as given in Appendix B.

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*Specification for water for general laboratory use (*second revision*).

APPENDIX A

(*Clauses* 2.6, 2.7 *and* 4.1; and *Table* 1)

METHODS OF TEST FOR ALUMINIUM POLISH, LIQUID FOR AIRCRAFT

A-1. TEST FOR STABILITY

A-1.1 Pour quickly well-mixed polish to mark into a 100-ml stoppered graduated cylinder and allow to stand for 15 minutes. Note if any liquid has been separated at the top.

A-2. DETERMINATION OF NON-VOLATILE MATTER

A-2.1 Procedure — Weigh accurately about 10 to 12 g of polish into a tared flat bottom dish, approximately 200 mm in diameter provided with a tightly fitted cover. Remove the cover and place sample over a steam bath until the bulk of volatile matter has evaporated, and then place in an oven maintained at $105 \pm 2°C$ for 4 hours. Cool in a disiccator, replace cover, and weigh the residue. Repeat drying and weigh to a constant mass.

A-2.2 Calculation

$$\text{Non-volatile matter, percent by mass} = \frac{B}{A} \times 100$$

where

A = mass in g of the sample taken for test, and

B = mass in g of the non-volatile residue.

A-3. DETERMINATION OF ABRASIVE CONTENT

A-3.1 Procedure — Accurately weigh 10 to 20 g of sample to the nearest 0·01 g into an ignited, tared platinum/nickel dish. Evaporate to dryness on a steam bath and heat over a low burner flame, gradually increasing the temperature, avoiding loss by spattering, until all volatile combustible matter has been removed and the sample is charred. Transfer the dish and contents to an electric muffle furnace at low red heat and ignite to constant mass at approximately 600°C. Allow to cool in a desiccator and weigh.

A-3.2 Calculation

$$\text{Abrasive content, percent by mass} = \frac{B}{A} \times 100$$

where

A = mass in g of the material taken for the test, and

B = mass in g of the residue left after ignition.

A-4. DETERMINATION OF RESIDUE ON SIEVE

A-4.1 Procedure — Weigh 20 g of material into a one-litre beaker, add 500 ml of oil of turpentine or petroleum hydrocarbon solvents, cover with a watch glass and digest on a steam bath for one hour. Disperse the solid matter by stirring vigorously and pour hot liquid and the solid matter through a 75-micron IS Sieve. Wash the material retained on the sieve with two or more 200 ml portions of hot oil of turpentine or petroleum hydrocarbon solvents, until no more solid passes through. Dry the sieve at 105 ± 2°C for about two hours, cool and transfer the solid particles to a tared and previously weighed dish by means of a soft camel hair brush. Heat at the above temperature to constant mass.

A-4.2 Calculation

$$\text{Residue, percent by mass} = \frac{M_1 \times 100}{M}$$

where

M_1 = mass in g of the residue, and

M = mass in g of the sample taken for test.

A-5. DETERMINATION OF EMULSIFYING AGENT

A-5.1 Calculate the emulsifying agent content from the difference in percentage of non-volatile matter (**A-2**) and abrasive content (**A-3**).

A-5.2 Calculation

Emulsifying agent, percent by mass = percentage of non-volatile matter (**A-2**) — percentage of abrasive content (**A-3**).

APPENDIX B

(*Clause* 5.1)

SAMPLING OF ALUMINIUM POLISH, LIQUID FOR AIRCRAFT

B-1. GENERAL REQUIREMENTS FOR SAMPLING

B-1.0 In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

B-1.1 Samples shall be taken in a protected place not exposed to damp air, dust or soot.

B-1.2 The sampling instruments shall be clean and dry when used.

B-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

B-1.4 The samples shall be placed in clean, dry and airtight glass or other suitable containers on which the material has no action.

B-1.5 The sample containers shall be of such a size that they are almost completely filled by the sample.

B-1.6 Each sample container shall be sealed airtight after filling and marked with full details of sampling, the date of sampling and the month and year of manufacture of the material.

B-1.7 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the ambient temperature.

B-2. SCALE OF SAMPLING

B-2.0 Samples to determine conformity of a consignment of polish to this specification shall be selected so as to be representative of the consignment. Samples drawn in compliance with an agreement between the purchaser and the manufacturer, to evaluate various characteristics of the material, shall be held to be representative of the consignment. In the absence of such an agreement, the following sampling scheme is racommended to serve as a guide.

B-2.1 Lot — All the containers in a single consignment of the material drawn from the same batch of manufacture and of the same size shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture or of different sizes of containers, the containers belonging to the same batch and size shall be grouped together and each such group shall constitute a separate lot.

B-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of this specification.

B-2.2 The number of containers (n) to be chosen from a lot shall depend upon the size of the lot (N) and shall be in accordance with Table 2.

TABLE 2 NUMBER OF CONTAINERS TO BE SELECTED

(*Clause* B-2.2)

Lot Size (N)	No. of Containers to be Selected (n)
(1)	(2)
Up to 500	10
501 ,, 1 000	15
Above 1 000	20

B-2.3 These containers shall be chosen at random from the lot. In order to ensure the randomness of selection, random number table as agreed to between the purchaser and the manufacturer shall be used. For random selection, guidance may be obtained from IS : 4905-1968*.

B-3. PREPARATION OF COMPOSITE SAMPLE

B-3.1 Shake well each of the containers selected as in **B-2.3**. Pour out a quantity of polish such that the total quantity obtained from all the containers provides material sufficient for all the tests (about 500 ml). Thoroughly mix the material drawn from all the selected containers so as to form the composite sample. Divide this composite sample into three parts, each sufficient for carrying out the intended tests and transfer them to thoroughly cleaned and dry sample containers. Send one each to the purchaser and the manufacturer, and reserve the third as referee sample bearing the seals of the purchaser and the manufacturer. Keep the referee sample at a place agreed to between the purchaser and the manufacturer.

B-4. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-4.1 Tests for all characteristics shall be done on the composite sample.

B-4.2 The lot shall be declared as conforming to this specification if the test results satisfy the corresponding requirements.

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*Method for random sampling.